

IN THE SPECIFICATION

Please amend the Title on page 1 as follows:

~~FIXING DEVICE AND IMAGE FORMING APPARATUS USING THE SAME~~ HAVING  
A SEPARATION PLATE

Please amend the paragraph at page 12, lines 9-24, as follows:

An intermediate transfer endless belt 1 as an intermediate transfer body is provided right above the tandem image forming part. The intermediate transfer belt 1 is wound around and tensioned by support rollers 1a and 1b. A driving motor (not shown in FIG. 1) as a driving source is connected to a rotational shaft of the support roller 1a functioning as a driving roller. As the driving motor is driven, the intermediate transfer belt 1 revolves in the counter-clockwise direction in FIG. 1 so that the dependent support roller 1b revolves. Primary transfer devices 11Y, 11C, 11M and 11K are provided inside of the intermediate transfer belt [[10]] 1 so as to transfer the toner image formed on the photosensitive bodies 21Y, 21C 21M and 21K onto the intermediate transfer belt 1.

Please amend the paragraph at page 12, line 25 to page 13, line 15, as follows:

A secondary transfer roller 5 as a secondary transfer device is provided at a more downstream position in a driving direction of the intermediate transfer belt 1 than the primary transfer devices 11Y, 11C, 11M and 11K. The intermediate transfer belt 1 is put between the support roller [[1B]] 1b and the secondary transfer roller 5 and the support roller [[1B]] 1b works as a pushing member. The printer also has a paper feeding cassette 8, a paper feeding roller 7, resist rollers 6, and others. In addition, a fixing device 4 configured to fix an image on the transfer medium S and a paper discharge roller 3 are provided at a downstream side of the secondary transfer roller 5 in a moving direction of a transfer medium S onto which a toner image is transferred by the secondary transfer roller 5.

Please amend the paragraph at page 14, line 25 to page 15, line 10, as follows:

In timing with the image forming operation, the transfer medium S is conveyed between the secondary transfer roller 5 and the intermediate transfer belt 1. The transfer medium S is put between the secondary transfer roller 5 and the intermediate transfer belt 1 so that the secondary transfer roller 5 and the intermediate transfer belt 1 form a secondary transfer nip. The toner image on the intermediate transfer belt 1 is transferred (second transfer) onto the transfer medium S by the secondary transfer roller 5.

Please amend the paragraph at page 15, line 23 to page 16, line 6, as follows:

Toner image forming parts 101Y, 101C, 101M and 101K are formed in a body and function as process cartridges detachable from the main body of the printer. The process cartridge can be pulled out to a front side of the main body of the printer along a guide rail. By pushing the process cartridge to a deep side of the main body of the printer, the toner image forming part can be provided in a designated position.

Please amend the paragraph at page 16, line 7 to page 17, line 6, as follows:

The process cartridges of the toner image forming parts 101Y, 101C, 101M and 101K have same structures and perform the same actions. In the following explanations, indications Y, C, M and K are omitted and details of the process cartridge of the toner image forming part are discussed. FIG. 2 is a schematic view of a process cartridge of a toner image forming part 101 of the printer shown in FIG. 1. As shown in FIG. 2, a charging roller 17 as a charging device, a developing device 10, a fur brush 36 as a photosensitive body cleaning device, a cleaning blade 33 and others are arranged around the photosensitive body 21 rotating in a clockwise direction. Thus, in the printer of this embodiment, the charging roller

17 is arranged below the photosensitive body 21 in a vertical direction. Furthermore, a cleaner roller 18 as a charging cleaning roller is provided below the charging roller 17. The cleaner roller 18 rotatably comes in contact with and cleans the surface of the charging roller 17. In addition, the photosensitive cleaning device includes the fur brush 36, the cleaning blade 33, and waste toner conveyance coil 34 for discharging a waste toner removed from the photosensitive body 21 to the outside of the process cartridge.

Please amend the paragraph at page 24, line 18 to page 25, line 20, as follows:

A separation plate 100 having a head end part 104 is provided at a downstream side in a paper conveyance direction of the fixing nip and thereby the paper is prevented from being wound around the fixing belt 43. A detailed structure of the separation plate 100 is discussed below. A head end of the head end part 104 does not come in contact with the fixing belt 43. A gap having a length equal to or less than 1 mm is formed between the head end of the head end part 104 and the fixing belt 43. In a case where the head end of the head end part 104 comes in contact with the fixing belt 43, the fixing belt 43 may be damaged by the head end of the head end part 104. In a case where the gap between the head end of the head end part 104 and the fixing belt 43 is greater than 1 mm, the transfer medium discharged from the fixing nip is caught between the head end of the head end part 104 and the fixing belt 43 so that paper jam may happen. Furthermore, the longer the time duration that the transfer medium is adhered to the fixing belt 43 is, the more unevenness of the image may be easily generated. Hence, it is preferable that the transfer medium be separated from the fixing belt 43 by the head end of the head end part 104 as soon as the transfer medium is out from the fixing nip. Because of this, it is preferable that the head end of the head end part 104 be closer to the fixing nip.

Please amend the paragraph at page 25, line 21 to page 26, line 10, as follows:

Next, a conveyance path of the transfer medium before and after the fixing device is discussed. FIG. 4 is a schematic view showing a conveyance part of the transfer medium before and after the fixing device. As shown in FIG. 4, the transfer medium, onto which a non-fixed toner image from the intermediate transfer belt 1 is transferred by the secondary transfer roller 5, enters the fixing nip along an entrance guide plate 51. The transfer medium being out from (exiting) the fixing nip is separated from the fixing belt 43 by the head end part [[101]] 104. The separated transfer medium is conveyed along the separation plate 100 by the conveyance roller 3 so as to be discharged to a paper discharge tray (not shown).

Please amend the paragraph at page 26, line 11 to page 27, line 12, as follows:

Next, the separation plate 100 is discussed with reference to FIG. 5 and FIG. 6. FIG. 5 is a cross-sectional view of the separation plate 100. FIG. 6 is a perspective view showing a peripheral structure of the separation plate 100. As shown in FIG. 5, the separation plate 100 includes a head end part 101 and a guide part 102. The head end part [[101]] 104 has, as shown in FIG. 5, a structure where the thickness of the head end of the head end part [[101]] 104 is equal to or less than 0.2 mm. While the head end of the head end part [[101]] 104 has a small thickness in this embodiment, the thickness of the entire head end part [[101]] 104 may be small. In a case where the thickness of the head end of the head end part [[101]] 104 is equal to or less than 0.2 mm, the head end of the head end part [[101]] 104 may be situated closer to the fixing nip. In a case where the thickness of the head end part [[101]] 104 is equal to or less than 0.2 mm, it is possible to easily raise the temperature of the head end part [[101]] 104 to such as 40 °C or higher at which temperature water vapor does not adhere to the head end part 101 due to heat of the transfer medium or radiation heat from the ~~transfer~~

fixing belt 43. The head end part 104 may be formed such that the head end of the separation plate 100 has a thickness equal to or less than 0.2 mm or such that a separate plate having a thickness equal to or less than 0.2 mm is adhered.

Please amend the paragraph at page 27, line 13 to page 28, line 1, as follows:

The guide part 102 has a function whereby the transfer medium being out from the fixing nip is guided. A case installing part 103 is provided on both side surface of the guide part 102. These case installing parts 103 are attached to a case (not shown) of the fixing device. A positioning part 106 is provided at both ends of the guide part 102 so that the gap between the fixing belt 43 and the head end of the head end part 104 is securely maintained. The positioning part 106 is provided at the guide part 102 so as to come in contact with a transfer medium non-contact area of the fixing belt 43 so that the gap between the fixing belt 43 and the head end of the head end part 104 is securely maintained.

Please amend the paragraph at page 28, lines 2-14, as follows:

The guide part 102 has a heat conductivity limitation part. The heat conductivity limitation part has a structure where transfer of the heat of the head end part 104 to the guide part 102 is limited so that the temperature of the head end part 104 can easily rise. More specifically, as shown in FIG. 6, plural notch parts 102a provided in the guide part 102 and having rectangular configurations work as the heat conductivity limitation parts. That is, the heat transfer from the head end part 104 to the guide part 102 is limited by providing a large gap between the guide part 102 and the head end part 104 by the notch parts 102a.

Please amend the paragraph at page 29, lines 2-21, as follows:

Plural reinforcing parts 102b for reinforcing the head end parts 101 are provided between notch parts 102a. The reinforcing parts 102b reinforces the head end part [[101]] 104 so as to prevent the head end part [[101]] 104 having a thin plate shaped configuration from being deformed. It is preferable that the reinforcing parts 102b face both ends of the transfer medium having a size which can be used for the printer. In the printer of this embodiment, as shown in FIG. 7, the reinforcing parts 102b are provided in four positions, namely positions facing both ends of the transfer medium having a minimum size which can be used for the printer and positions facing both ends of the transfer medium having a maximum size which can be used for the printer. In the printer of this embodiment, the center of the transfer medium passes through the center of the fixing belt 43. As shown in FIG. 7, the reinforcing parts 102b are provided symmetrically wherein the center of the fixing belt 43 is a center.

Please amend the paragraph at page 29, line 22 to page 30, line 11, as follows:

When the head end of the transfer medium is discharged from the transfer nip, the head end may be unstable, such as curled. Hence, the head end of the transfer medium does not always contact the head end part [[101]] 104. The head end of the transfer medium may come in contact with the guide part situated above the head end part [[101]] 104. However, even if the transfer medium comes in contact with the guide part, the head end of the transfer medium comes in contact with the reinforcing part 102b situated in a position facing both ends of the transfer medium having a minimum size which can be used for the printer. Hence, it is possible to separate the transfer medium from the fixing belt and to maintain the conveyance capability of the transfer medium.

Please amend the paragraph at page 30, line 25 to page 31, line 9, as follows:

In addition, since heat is transferred to the reinforcing part 102b, the temperature in the vicinity of the reinforcing part 102b of the head end part ~~[[101]]~~ 104 is harder to make rise than the temperature of other parts. However, by providing the reinforcing part 102b in a position facing the end part of the transfer medium, it is possible to promote the rise of the temperature in the vicinity of the reinforcing part of the head end part ~~[[101]]~~ 104. The reason of this is discussed below.

Please amend the paragraph at page 31, line 10 to page 32, line 8, as follows:

As discussed above, the temperature of the head end part ~~[[101]]~~ 104 rises due to heat of the transfer medium and the radiation heat of the fixing belt 43. The temperature of a part of the head end part coming in contact with the transfer medium may rise due to the heat of the transfer medium easier than the temperature of a part not coming in contact with the transfer medium. On the other hand, the temperature of the part of the head end part not coming in contact with the transfer medium may rise due to the radiation heat of the fixing belt 43 easier than the temperature of the part coming in contact with the transfer medium. This is because heat of the part not coming in contact with the transfer medium of the fixing belt 43 is not caught by the transfer medium and therefore the temperature of the part not coming in contact with the transfer medium of the fixing belt 43 is higher than the part coming in contact with the transfer medium. Accordingly, the temperature of the part of the head end part not coming in contact with the transfer medium may rise due to the radiation heat of the fixing belt 43 easier than the temperature of the part coming in contact with the transfer medium.

Please amend the paragraph at page 32, lines 9-24, as follows:

The part facing the end part of the transfer medium of the head end part ~~[[101]]~~ 104 receives influence of the rise of the temperature due to both radiation heat of a side whose temperature is higher of the fixing belt 43 and contact of the transfer medium. Hence, the temperature of the part facing the end part of the transfer medium of the head end part ~~[[101]]~~ 104 may rise easier than other parts of the head end part ~~[[101]]~~ 104. The reinforcing part 102b is provided in a position facing the end part of the transfer medium of the head end part ~~[[101]]~~ 104 whose temperature easily rises so that it is possible to prevent the situation where the temperature in the vicinity of the reinforcing part of the head end part ~~[[101]]~~ 104 is hard to rise due to removal of the heat by the reinforcing part 102b.

Please amend the paragraph at page 32, line 25 to page 34, line 13, as follows:

In addition, as shown in FIG. 8, heating values of the heat source 45a provided inside of the pressing roller 45 may vary depending on an axial direction so that the temperature of the part facing the reinforcing part 102b of the heating roller 45 is higher than a temperature of other part. For example, as is shown in FIG. 8-(a), a winding gap of a Nichrome wire in a position facing the reinforcing part 102b of the pressing roller 45 is made narrower than other part. Furthermore, as is shown in FIG. 8-(b), two heat sources 45a are provided. One heat source 45a-1 uniformly heats the entire pressing roller 45. The other heat source 45a-2 heats only a part facing the reinforcing part 102b of the pressing roller 45. Under this structure, the temperature of the part facing the reinforcing part 102b of the heating roller 45 is higher than the temperature of other part. As a result of this, the temperature in the vicinity of the reinforcing part of the head end part ~~[[101]]~~ 104 rises more easily than the temperature of other parts due to the radiation heat of the pressing roller 45. Hence, even if the heat of the head end part ~~[[101]]~~ 104 in the vicinity of the reinforcing part is removed by the reinforcing



part, heat can be compensated for the radiation heat of the pressing roller whose temperature is higher than other parts. As a result of this, it is possible to prevent the difficulty in raising the temperature in the vicinity of a connection part of the head end part [[101]] 104.

Furthermore, while heating values of the heat source 45a provided inside of the pressing roller 45 vary depending on the axial direction in an example shown in FIG. 8, the present invention is not limited to this. For example, in order to make the temperature of the part facing the reinforcing part 102b of the fixing belt 43 higher than the temperature of other parts, the heating value generated from the heat source 44 provided inside of the heating roller 42 may vary depending on the axial direction.

Please amend the paragraph at page 34, line 14 to page 35, line 21, as follows:

In addition, as shown in FIG. 5, a water vapor receiving part 105 is provided in the guide part 102 of the separation plate 100. The water vapor receiving part 105 is inclined to a side of the fixing roller 46 against a virtual line connecting the guide part 102 and the head end part [[101]] 104. By inclining the water vapor receiving part 105 to the side of the fixing roller, it is possible to provide the water vapor receiving part 105 at a designated distance apart from the transfer medium guide surface of the separation plate [[101]] 104. Because of this, it is possible to prevent the water vapor adhering to the water vapor receiving part 105 from being adhered to the transfer medium. In addition, by inclining the water vapor receiving part 105 to the side of the fixing roller, it is possible to prevent a bad influence on the image due to adhesion of the water vapor generated from the transfer medium to the photosensitive body, the lens of a light exposure device, or the like. Furthermore, by inclining the water vapor receiving part 105 to the side of the fixing roller, a head end part of the water vapor receiving part 105 is arranged at a side further away from the transfer medium guide surface than is the head end part [[101]] 104. Under this structure, it is

possible to prevent water vapor condensed at the water vapor receiving part 105 from changing to water drop so as to be dropped onto the head end part ~~[[101]]~~ 104. In a case where the water vapor of the transfer medium is adhered to the reinforcing part, the water vapor of the transfer medium is not increased because of the size of an area of the reinforcing part so that condensation can be prevented.

Please amend the paragraph at page 35, line 22 to page 36, line 13, as follows:

The water vapor receiving part 105 shown in FIG. 5 is made of the same metal as the guide part 102 in a body with the guide part 102. However, the present invention is not limited to this. The water vapor receiving part 105 may be provided separately from the guide part 102 as shown in FIG. 9. In addition, the water vapor receiving part 105 shown in FIG. 9 is made of resin having a lower conductivity than the head end part ~~[[101]]~~ 104. Because of this, rise of the temperature of the water vapor receiving part 105 due to the heat inside of the fixing device is hard to be generated. Thus, water vapor from the transfer medium can be easily condensed onto the water vapor receiving part 105. Because of this, it is possible to gather more of the water vapor from the transfer medium, as compared to a water vapor receiving part made of a metal the same as the guide part 102.

Please amend the Abstract at page 54 to read as follows: